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ABSTRACT

This paper presents a philosophical statement on the problem of data comparability. The discussion is intended to provide guidance in determining the direction of the information exchange procedures project of the NCHEMS (National Center for Higher Education Management Systems) at WICHE (Western Interstate Commission on Higher Education). Following background introductory material, guidelines for compatibility, guidelines for comparability and standardization of educational data vs. regimentation of educational offerings are discussed. (MJM)

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National Center for Higher Education
Management Systems at WICHE

DATA COMPARABILITY IN HIGHER EDUCATION

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PREFACE

It is technically possible to compare student, departmental, or campuswide data among institutions. It is not necessarily appropriate or meaningful to do so. The imagination is capable of creating infinite details and myriad examples of the implications of the issue of data comparability. The authors have chosen, instead, to address themselves first to the philosophical issues of comparability, which they deem basic to such necessary, but subsequent discussion of details and illustrations.

In this paper, then, the authors present a philosophical statement on the problem of data comparability. The discussion is intended to provide guidance in determining the direction of the Information Exchange Procedures project of the National Center for Higher Education Management Systems at WICHE.

The reader's response is solicited.

INTRODUCTION

The major resources made available to higher education during the expansive decade of the 1960s enabled relatively painless decisions on resource allocation to be guided more by concern for desired enrollment and academic program development than by concern for the efficient use of resources. Now the operative forces of the 1970s demand a reordering of higher education's administrative priorities. The public's open-ended financial commitments to welfare, to public medical care, to unemployment, to the military, and to space programs are requiring an ever-increasing share of the state and national treasuries. Virtually every area of public expenditure, including higher education, is being cut back, is being maintained at current levels, or is experiencing a slower rate of increase in the face of rising demands for service.

Mounting frustrations with the rapidly increasing costs of higher education lead the appropriators and allocators of scarce public funds to look for more information that would help them with their difficult decisions. They want to know how an infusion of funds will benefit people and programs or how a withdrawal of funding will adversely affect those people and programs. They must keep in mind both individual and societal needs in their own states, and they must necessarily consider how the productive utilization of funds administered at one institution compares with fund utilization at another institution.

Legislators, funding agencies, chief executive officers, governing boards, and donors not only are experiencing what Cheit calls the "new depression in higher education," but also must bear the responsibility of guiding and managing higher education in these times. The question is not whether higher education will continue to exist and to receive public support, but rather, how much support is necessary, for what activities, for whom, at what price, and who will make the decisions? Many of these decisions are value judgments whose answers are found in one's mind and heart and not in the data base of an institution. Nevertheless, the legitimate concerns of legislators, funding agencies, chief executive officers, governing boards, and donors include necessary questions about how effectively institutions are managing their resources and what costs are reasonable for certain kinds of activities.

It is primarily for people with these general concerns for proper use of resources that this paper is written.

BACKGROUND

The basic objective of the National Center for Higher Education Management Systems (WICHE-PMS) is to improve the management capability of institutions and state agencies of higher education. Virtually all the activities of NCHEMS (WICHE-PMS) began in response to management needs of higher education. While certainly not comprehensive, the following management concerns and needs require particular attention:

1. Better understanding of the goals, aspirations, and needs of the constituents of higher education to determine objectives and to outline better methods of resource allocation. Further, there is urgent need to understand the market for college graduates in order to assure continued financial support.

2. Better identification of institutional objectives. Failure to do do is bad management in a public institution; success in doing so will significantly improve higher education's credibility. In fact, a clear expression of objectives may be higher education's highest priority need.

   a. A necessary element of this identification must be an increased understanding of how these objectives meet the goals and aspirations of the institution's constituents and an increased specificity of the objectives to facilitate better planning.

   b. Higher education must express its objectives in terms that people outside the institutions of higher education can understand.

   c. Finally, such identification must lead to better understanding of which information associated with the decision-making processes appears to be the most credible to the constituents of higher education in order to be able to express precisely, believably, and in language that is understood the objectives and costs associated with higher education. Administrators must be able to communicate in the same language to legislators and funding agencies.

3. Clearer delineation of alternate courses of action to meet objectives and a common understanding of alternate descriptions of objectives.

4. Workable criteria to tell administrators, and others, whether objectives have been achieved and, if not, why not.

5. Clearer understanding of the costs associated with achieving specified objectives using alternative courses of action.

6. Better methods of evaluating the costs of programs in relation to their accomplishment of institutional or public objectives. This includes data on comparative mixes of the resources used by programs and the various characteristics of the outputs produced by the same programs.

7. Better understanding of the interrelationships between restricted and unrestricted funds and a confidence that funds from external sources are being maximized without (a) violating the objectives of the institution or (b) committing other institutional resources by accepting "free money" and thus subverting the normal resource allocation process.

8. Better understanding of the resources available for higher education and their impact. For example, which choice of activities will attract the necessary resources to accomplish alternate sets of desired objectives? Which resource acquisitions will apply constraints upon existing or potential resources? Which sets of resources will attract other resources? How are these affected by the magnitude of the resources received?

9. Better methods of amortizing all costs so as to associate more equitably the cost burdens with benefits received over time.

No absolute standards apply to the measurement of objectives, to efficient resource use, to optimal resource acquisition, or to the other concerns raised by educational administrators. In the absence of absolute norms, planners turn to comparative measures of costs, goal achievement, and different mixes of resource use as one possible method of evaluating the effectiveness and efficiency of a given activity or program. For example, faculty salaries, student/faculty ratios, and tenure ratios are computed at similar institutions to determine whether the number of faculty members at Institution A should be increased and whether their salaries are competitive. Such comparisons have long been made and will continue to be made by institutions themselves and by their funding agencies.

One of the purposes of NCHEMS (WICHE-PMS) is to make meaningful comparisons possible, recognizing that not all possible comparisons are meaningful. The question of whether or not comparisons are possible or technically

feasible is a question of compatibility; some guidelines for compatibility are given in the following section. The question of whether or not comparisons are meaningful is a question of comparability; some guidelines for comparability are also given in a subsequent section. While the requirements for compatibility are largely technical, the requirements for comparability are far more judgmental, because comparability, like beauty, is in the eye of the beholder.

GUIDELINES FOR COMPATIBILITY

In general, we say that one set of data is compatible with another set of data if the elements of one set are capable of orderly, efficient integration and operation with elements of other sets of data. Data derived from one institution (or activity) are compatible with data derived from another institution (or activity) to the extent that both data sets are composed of data elements that are (1) defined in exactly the same way, (2) measured in exactly the same way, and (3) aggregated and summarized by the same procedures.

For example, if space utilization of two institutions is to be compared, the kinds of spaces and the use of space must be measured compatibly in the two institutions. This means that both institutions should use the same definitions of space types (classroom, class lab, office), room capacities, use categories (lecture, seminar, research, office, maintenance), time periods of use, and all the other basic characteristics of physical facilities. In addition, both institutions must use the same measures of the space, including

differentiation between assignable square feet for instructional use or some specified purpose and outside gross square feet. Finally, both institutions must aggregate and report their space data in exactly the same way. The analysis of physical facilities is one in which "standard" definitions, measurements, and aggregation conventions have existed for some time and have produced compatible measures among institutions. However, most other areas of institutional activity do not have a tradition of compatible data. One of the goals of the NCHEMS (WICHE-PMS) Data Elements Dictionary and Program Classification Structure is to establish, through consensus, a set of data element definitions and aggregation procedures that will lead to "NCHEMS (WICHE-PMS) compatible" data systems for major areas of institutional activity. In general, information systems are NCHEMS (WICHE-PMS) compatible to the extent that they use NCHEMS (WICHE-PMS) standard data elements and NCHEMS (WICHE-PMS) standard aggregation and analysis procedures.

Having compatible measures, however, meets only one (and perhaps the simplest) condition necessary for comparability.

GUIDELINES FOR COMPARABILITY

While it is technically possible to compare student, departmental, or campus-wide data produced by NCHEMS (WICHE-PMS) compatible information systems for two institutions, it is not necessarily appropriate or meaningful to do so.

The comparison of even compatible data should be based on either consensus or an executive decision on:

1. the purposes of the comparison
2. the description of the institutional activities or outputs being compared
3. the relations between resources consumed and activities performed
4. the probable usefulness of the information obtained

In describing the purposes of the comparison, the funding agency or administator making the comparison should articulate his objectives and show how these objectives relate to the comparison. At this point, the managers of the programs that are being compared might argue that the purposes of their activities are different from the objectives indicated by the funding agency. This conflict must be resolved either by agreement or by executive decision before a meaningful comparison can be conducted.

For example, if a state's legislature is primarily interested in raising the general level of language ability of the state's population, then legislators might want to compare the average increase in verbal ability scores achieved by students in community colleges, state colleges, and research-oriented universities. On the other hand, academic deans might argue that some English departments serve special purposes, including, for instance, the training of Ph.D.'s for other English faculties, and, therefore, a comparison of the costs associated with the increases in verbal ability scores should not be made among community colleges, state colleges, and major universities.

This is a fairly typical example, and the conflict of the objectives of the comparison with the respective objectives of the programs being compared must be resolved before all parties to the comparison will respect its results. The second point is that the characteristics (parameters, proxies) in terms of which two activities or institutions are being compared must be the same. If one decided that students completing an engineering program could be described by their Graduate Record Examination scores, graduate admission percentage, and average starting salaries, then one should collect the same compatible data from any other institutions that are candidates for comparison. This means that the activity characteristics used for comparison should be as comprehensive as possible within the purposes of the comparison. Furthermore, the activity characteristics should include the timing and scheduling of activities of the institution. For example, one should avoid the pitfalls of comparing nine-month academic appointments with annual appointments in private industry or one-time-only extension courses with major or academic course sequences extending over several years.

Finally, all parties to the comparison should understand the relationships between the resources consumed and the activities performed. Many educational activities are joint processes that consume a wide variety of resource inputs (dollars, space, personnel) and provide a variety of outputs (educated young people, new inventions or research findings, service to other programs, community services) in such a manner that they are inextricably linked. Attributing costs in joint process situations in any meaningful way is very difficult; arbitrary cost proration procedures

may be very misleading. Therefore, comparisons between two joint process activities or between a joint process activity and a single purpose activity should be done very carefully with full cognizance of the particular relationships within the two sets of activities.

Another important consideration in determining the comparability of two activities or institutions is whether or not they consume comparable resources. It is very tempting to assert that "a dollar is a dollar is a dollar" because all dollars are interchangeable. But their purchasing powers in different markets are certainly not. For example, the salaries paid to faculty and administrators of religious institutions are typically below salaries paid by public institutions because sectarian schools often recruit their faculty in a very limited market of individuals especially desirous of serving in that kind of institution. Other examples are the regional variations in construction costs and clerical wages. In general, for meaningful comparisons the institutions being compared should purchase their inputs in the same market, or an adjustment should be made to account for the price differentials in the respective markets. This means that most of the unit prices of commodities purchased by educational institutions will be approximately the same, with perhaps some variation in personnel costs reflecting the differing nonmonetary rewards associated with employment in different situations.

A further consideration in the relationships between resources consumed and activities performed are the operating constraints that an institution faces. Restricted fund sources often influence the decision to undertake one activity

instead of another. Accounting conventions, internal recharges, traditional income-sharing procedures (e.g. federal overhead recovery divided evenly between the governing board and the state government or general endowment apportioned among the various schools on the basis of the book values of their individual endowments), and many other factors all influence the mix of activities chosen by an institution. These factors should be explicitly stated and understood by all parties to the comparison.

These comments are not meant to inhibit meaningful comparisons but to facilitate them by pointing out some of the major guidelines that one should follow in constructing an appropriate comparison. These guidelines are summarized below.

1. The parties to the comparison should be aware of and agree to the purposes of the comparison to insure credibility of the results.
2. The comparison should be based on similar comprehensive descriptions of the activities for the purposes of the comparison.
3. The parties to the comparison should understand the relationships between the costs and the levels of activities with particular attention given to:
    a. joint products (many outputs from one activity)
    b. characteristics of the inputs (are they comparable?)
    c. operating constraints (restricted fund sources)

Adhering to these guidelines will not insure comparability, but such adherence will avert many inappropriate and potentially misleading comparisons. In other words, good judgement is needed in addition to these three major guidelines to establish meaningful comparisons whose full implications can be realized in practice.

STANDARDIZATION vs. REGIMENTATION

A fear often expressed by faculty and academic administrators is that standardization of educational data will inevitably lead to regimentation of educational offerings. Some of this fear would be assuaged (or possibly confirmed) by the first guideline, which would make the purposes of the comparison explicit. At least the uncertainty of motives would be reduced. But a significant residual fear would undoubtedly remain, a fear stemming from a misinterpretation of the role of standards. The existence of a standard for length (the meter) does not result in everything's having the same length. Because a carpenter uses a measuring rule to mark his lumber does not mean that every cabinet will be the same size but that the top and bottom of a given cabinet will match. Standards of volume and weight insure that a shopper knows how much she is buying in a supermarket, but they do not force all foods to be alike. In other words, standard measurements can enable diversity and provide the tools to avoid homogenization.

CONCLUSION

Whether or not everyone agrees on the notion of comparability, comparisons will be made. Difficult choices will be made. The complex nature and diversity of higher education, coupled with the ever-present, ever-increasing shortage of both public and private funds, make choices in spending and allocation inevitable. The range of disagreement over resource allocation can be narrowed with the wise use of comparable data by identifying and explaining factual differences between programs. Such use would enable administrators, legislators, governing boards, and others to focus much more of their attention on the judgmental variables in their decisions. It is necessary, therefore, that we reach common definitions and understanding on all sides of the issue of resource use. The future adequacy of funding of higher education may depend on the outcome of this struggle for understanding.